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10TE81

Eighth Semester B.E. Degree Examination, Dec.2023/Jan.2024
Optical Networking

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Explain the Evolution of Optical Fiber Transmission System. **(08 Marks)**
b. Explain the services offered by Second - Generation Optical Networks. **(06 Marks)**
c. What are Solitons? Explain the significance of solitons for optical communication and give an application. **(06 Marks)**

2 a. Mention any four characteristics of good Optical Filter. **(04 Marks)**
b. Explain the principle of operation of EDFA. **(08 Marks)**
c. What are Gratings? Describe a simple optical add / drop element based on fiber bragg gratings **(08 Marks)**

3 a. What is Wavelength Conversion? What are different methods of Wavelength Conversion? **(08 Marks)**
b. Explain Micro Electro Mechanical system switches. **(06 Marks)**
c. Explain Distributed Feedback Laser and Distributed Bragy Reflector. **(06 Marks)**

4 a. Discuss several forms of dispersion arise in optical communication systems and explain how chromatic dispersion is compensated using Chirped fiber bragg gratings. **(10 Marks)**
b. What are the sources of Interchannel and Intrachannel cross talk? Explain how switch crosstalk can be reduced **(10 Marks)**

PART – B

5 a. Explain a layered view of network consisting of first generation optical networks. **(08 Marks)**
b. Explain the hierarchical in SONET and SDH. **(08 Marks)**
c. Describe the advantage of SONET/SDH over PDH. **(04 Marks)**

6 a. Explain the features of Optical layer. **(10 Marks)**
b. Explain Routing and Wavelength assignment problem. **(10 Marks)**

7 a. Describe Virtual Topology design problem. **(08 Marks)**
b. Define ILP. Explain ILP formulation. **(08 Marks)**
c. Explain function of Control management. **(04 Marks)**

8 a. Discuss Optical Time Division multiplexing for packet interleaving. **(10 Marks)**
b. Discuss architecture of an access network. Explain the two main approaches proposed to upgrade the access network infrastructure. **(10 Marks)**

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